

substrate and a resistive layer, wherein at least one resistive element made of carbon is arranged between the active layer and the micro-tips, the resistive element having a controlled electrical resistivity between the first and second electrical resistivity values of the active layer, as recited in independent claim 18.

Zahorik teaches a method for manufacturing a memory device having a plurality of memory cells (Abstract). Moreover, Zahorik teaches a memory device that includes a plurality of memory cells, and each memory cell comprises a resistive memory element made of chalcogenide material, which is able to change states from an amorphous state with high electrical resistivity to a crystalline state with a lower electrical resistivity when it is subjected to electrical stimulation (paragraph [0008]). For example, Zahorik teaches a memory cell 18 that includes a chalcogenide element 28 disposed between two electrodes 30 and 32 (Fig. 4; paragraphs [0032]-[0040]). Zahorik also teaches that the chalcogenide element 28 is a uniform layer that includes a protruding portion 34 that is designed to come into contact with the electrode 32. Moreover, Zahorik teaches a layer of insulating material 36 arranged between the chalcogenide material and the electrode 32, the layer 36 surrounding the protruding portion 34 so as to prevent current from flowing through the memory element 28 other than through the portion 34 (paragraphs [0034]-[0036]). Furthermore, Zahorik teaches that the insulating material of the layer 36 is typically a dielectric material such as silicon nitride or silicon dioxide (paragraph [0036]). Furthermore, although Zahorik teaches that the electrodes 30 and 32 may include a metal layer and a layer of carbon (paragraph [0033]), these electrodes 30 and 32 are conducting materials, and do not have a controlled electrical resistivity comprised between the first and second electrical resistivity values of the active layer, as recited in independent claim 18. Thus, it is clear that Zahorik fails to teach a resistive element that is made of carbon with a controlled electrical resistivity comprised between the first and second electrical resistivity values of the active layer corresponding to

the chalcogenide element 28 because Zahorik teaches insulating material of the layer 36, and the insulating material is a dielectric such as silicon nitride or silicon dioxide. As such, Zahorik fails to disclose, suggest or render obvious the features of independent claim 18.

Kuroda teaches a probe for use in an information recording apparatus for recording information on a recording medium by applying a voltage between the recording medium and a tape of the probe that includes a conductive tip (Abstract). However, Kuroda fails to cure deficiencies in Zahorik in disclosing or rendering obvious a data recording device having a resistive element made of carbon and having a controlled electrical resistivity, as recited in independent claim 18.

For at least these reasons, independent 18, and its dependent claims, are patentable over a combination of Zahorik and Kuroda.

Nonaka teaches a rewritable phase change type optical recording medium with excellent storage durability such as archival property and overwrite shelf property and that is less likely to have increased jitters, lower contrast and bursting due to deterioration by repeated overwriting (Abstract).

Hintz teaches a thermal magnetic recording system that achieves high areal bit density by combining the high linear bit density of magnetic recording and the high track density that is typical of magneto optic recording (Abstract).

Ohno teaches an optically active layer between 1 and 10 nanometers (Col. 2, lines 62-col. 3, line 2).

However, none of these references, alone or in combination, cure deficiencies in Zahorik in disclosing or rendering obvious the features of independent claim 18. Thus, independent claim 18, and its dependent claims, are patentable over a combination of all the applied references. Accordingly, withdrawal of the rejections of the claims under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 18-34 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



William P. Berridge
Registration No. 30,024

Tarik M. Nabi
Registration No. 55,478

WPB:TMN/amw

Date: August 8, 2006

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--